Wilm. office

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
AIR RESOURCES SECTION
EDWARD TATNALL BUILDING
P.O. BOX 1401
DOVER, DELAWARE 19901

TELEPHONE: (302) 736 - 4791

August 30, 1982

Permit: APC - 82/981 - OPERATION
Getty Refining and Marketing Company
FCC Carbon Monoxide Boiler - Delaware City

Getty Refining and Marketing Company
Delaware City, Delaware 19706

Attention: R. W. Ladd, Professional Specialist, Air & Water Conservation

Gentlemen:

Pursuant to the State of Delaware Regulations Governing the Control of Air Pollution, Regulation No. II, Section 3, approval of the Department of Natural Resources and Environmental Control is hereby granted for the operation of a carbon monoxide boiler on the fluid catalytic cracking unit at the Getty facility in Delaware City, based on the permit renewal request letter dated July 5, 1979, and signed by W. J. Tansey. This is a renewal of Permit APC 76/657 - OPERATION which was based on the application submitted on Form No. APF-32, dated May 26, 1971, and signed by R. C. Harms.

This permit is issued subject to the following conditions:

1. Air contaminant emission levels shall not exceed those specified by the State of Delaware Regulations Governing the Control of Air Pollution. The opacity of the emissions shall be subject to the provisions of Section 2.1 of Regulation XIV until such time as the Department may establish an alternate opacity standard pursuant to a letter dated May 29, 1981, from R. W. Ladd to R. R. French.

2. Representatives of the Department of Natural Resources and Environmental Control may, at any reasonable time, inspect this facility.

3. Emergency conditions that require venting of materials to the atmosphere or create a condition of air pollution shall be reported to the Division of Environmental Control immediately.

4. The sulfur content of the fuel mixture used to fire this unit shall not exceed 1.0 percent by weight.

5. This permit expires on February 22, 1985. Application for renewal must be made not earlier than 120 nor later than 90 days prior to expiration.

6. This permit shall be available on the premises.

7. Failure to comply with the provisions of this permit shall be grounds for suspension or revocation.

Sincerely yours,

Robert R. French, P.E.
Manager, Air Resources Section
Division of Environmental Control
Telephone: (302) 736-4791

RRF:RJT:kk

Delaware Refinery, Delaware City, Delaware 19706

Eastern Division

Manufacturing Department

May 26, 1971

Mr. J. Lynn Hopkins
Engineering Services
Air Resources
Department of Natural Resources
and Environmental Control
Dover, Delaware 19901

Dear Mr. Hopkins:

Getty Oil Company Fluid Catalytic Cracker
Carbon Monoxide Boiler Installation

Enclosed are completed application forms for the subject installation. This supplements the preliminary information contained in Mr. R. W. Ladd's letter to Mr. John C. Bryson dated January 22, 1971 as requested in your reply dated January 28, 1971.

These application forms are submitted in accordance with Regulation IX, Section 3.1.

Should you have any further questions concerning this application, please advise.

Very truly yours,

J. F. Skurla

J. F. Skurla
Environmental Engineer

JFS/rms
Attach.

Form No. APF-32

STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

AIR POLLUTION CONTROL

APPLICATION FOR REGISTRATION OF PROCESS EQUIPMENT
(Complete in Duplicate – Include Drawings of All Equipment)

1 Name of Plant or Establishment: Getty Oil Company Refinery	Date of Application: 5/24/71	Division Use Only Registration No.
Mailing Address (Street or P. O. Box): Delaware City	City:	County: New Castle Zip Code: 19706	Source Location No.
2 Name of Owner: Getty Oil Company		UTM Grid Coordinates
Mailing Address (Street or P. O. Box): Delaware City	City:	State: New Castle Zip Code: 19706	Examined By
3 Name of Person Signing This Application: ROBERT L. SMITH	Title:	Phone:	Date

4 Major Activity at This Location: X Manufacturing ___ Commercial ___ Apartment ___ Governmental ___ Institutional ___ Power Generation

No. of Employees at This Location	Describe Major Activity	SIC Code
	Petroleum Refining	291

5 Equipment to Be Registered: X New ___ Replacement ___ Modification (See Page 3) ___ Existing

Type (Kiln, Rotary Drier, Electric Arc Furnace, Etc.): Carbon Monoxide Boiler

6 Operating Schedule: 24 Hrs./Day 7 Days/Wk. 52 Wks./Yr.	Peak Period
7 Raw Materials Used Type: Boiler Feed Water	460,000 Lb/Hr Rate ~~Tons/Hr~~
Type:	Rate Tons/Hr.
8 Product Produced Type: 600 PSIG Steam	450,000 Lb/Hr Rate ~~Tons/Hr~~
Type:	Rate Tons/Hr.

9 Gas Flow Rate: Inlet _____ ACFM @ _____ °F
Outlet 540,000 ACFM @ 500°F °F

10 Is Direct Heat Transfer Used	Type Fuel	% Sulfur	% Ash	Quantity/Year
___ Yes X No	Oil Refinery Gas	1 Nil	Nil Nil	292,000 Bbl./Year or 175,000 MCF/Year

11 Stack Height	Inside Diameter at Outlet	Exit Gas Temp.	Material of Construction
350 Ft. Above Grade	180 In.	550 (1) 500 (2) °F.	Concrete

Exit Gas Flow Rate	Exit Gas Velocity	Sampling Ports	Number	Location
665,400 (1) 540,000 (2) ACFM	62 50 Ft./Sec.	X Yes ___ No	2	Ducts leading to stack

Height of Nearest Obstruction	Distance to Nearest Obstruction
500 (DP&L Stack) Ft.	Approx. 2650 Ft.

12 Flue Gas Cleaning Equipment	Expected Date of Completion of Installation or Modification
___ Yes X No	12/31/72

13 Gas Cleaning Equipment: CO Boiler

Manufacturer: Babcock & Wilcox

Type (Venturi Scrubber, Baghouse, Elec. Precip, Etc.)	Model or Cat. No.
Boiler	--

Describe Control Device (Example: Scrubber; Scrubbing Liquid, Liquid Rate (GPM), Recirculated, Method of Liquid Dispersion, Etc.)

The CO Boiler itself is a control device which will effectively eliminate the continuous discharge of carbon monoxide from this source.

Pressure Drop	Capacity	Gas Temperature
	295,000 SCFM	Inlet 650 °F. Outlet 500 °F.

Efficiency	Give Basis of Efficiency Determination

Inlet Contaminant Concentration	Outlet Contaminant Concentration
-- Lbs./Std. Cu. Ft.	-- Lbs./Std. Cu. Ft.

Inlet Emission Rate	Outlet Emission Rate
62,800 Lbs./Hr.	Nil Lbs./Hr.

Installation Cost of Device	Operating Cost of Device
$4,200,000	$300,000/Yr.

14 Emissions *

Type Sulfur Dioxide, Hydrogen Sulfide, Etc.	Actual Emissions (With Existing Controls)	Potential Emissions (Without Controls)
Carbon Monoxide	- (3) Lbs./Hr.	62,800 (3) Lbs./Hr.
Sulfur Dioxide	2500 Lbs./Hr.	2500 Lbs./Hr.
Particulates	500 Lbs./Hr. Max.	___ Lbs./Hr.

* All Values Should Represent Maximum Production Capacity

(1) Boiler and Fired Heater Flue Gases
(2) Boiler Flue Gases Only
(3) Maximum Emission Including Sulfur Dioxide generated from firing 1% Sulfur Fuel Oil.

R. C. Stevens

Signature of Owner or Authorized Agent

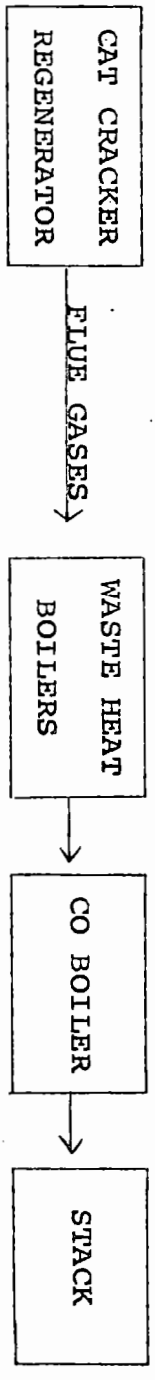
Describe Modifications

See letter from R. W. Ladd to J. C. Bryson dated January 22, 1971; Subject, Getty Oil Company Proposed Installation of Carbon Monoxide Boiler.

Sketch Plot Plan Here

See attached Figure I

Draw Process Flow Diagram (Schematic)



Care - Renewed ltr. + discuss with JCB as soon as possible

Getty Oil Company

(INCORPORATED)

Delaware Refinery, Delaware City, Delaware 19706

Eastern Division

Manufacturing Department

January 22, 1971

RECEIVED
JAN 26 1971
State of Delaware
Division of Environmental Control

Mr. John C. Bryson, Director
Division of Environmental Control
Department of Natural Resources
and Environmental Control
Dover, Delaware 19901

Dear Mr. Bryson:

Getty Oil Company Proposed Installation of Carbon Monoxide Boiler

Getty Oil Company proposes to install a carbon monoxide boiler on its Fluid Catalytic Cracking Unit at Delaware Refinery. This boiler will consume some 275,000 tons per year of carbon monoxide converting it into carbon dioxide. In addition, the boiler will consume trace quantities of unburned hydrocarbons contained in the flue gases from the Catalytic Cracker regenerator.

As part of this proposed installation, the flue gases presently discharged from the regenerator stack at 230 feet will be routed to the concrete stack located on plot. This stack which is 350 feet tall was designed for this eventuality (Air Pollution Authority Certificate of Approval No. 1960-3).

The cost of the proposed carbon monoxide boiler is estimated at approximately four million dollars. It is estimated that installation will be completed by the fourth quarter of 1972. Tie-in with the Fluid Catalytic Cracker regenerator will be made during the next Fluid Catalytic Cracker Turnaround presently scheduled for July 1973.

We wish to point out that the substantial quantities of carbon monoxide that will be removed by this installation do not contribute to or cause any violation of the adopted ambient air quality standard for this contaminant. The theoretical maximum concentration resulting from this discharge would occur at approximately one mile from the stack and be well below the 50 ppm 1-Hr. average. Theoretical

concentrations at distances further than this fall off very rapidly and are insignificant, particularly in those areas subject to carbon monoxide concentrations from automotive exhaust.

We do wish that it be known that we are not installing this control because the air quality standards would require it. They clearly would not in this instance. This is a prime example of how a percent-of-total-tons emitted-per-county basis is invalid in determining relative impact on air quality. It is important that this be understood, if indeed we are to implement effective and realistic abatement strategies.

It is Getty Oil Company's policy and commitment to reduce the discharge of air contaminants wherever and whenever it is technologically and economically possible to do so. We are pleased that in this instance it is possible to do so even in the absence of any requirement from an air quality standpoint.

We are presently waiting for responses to our requests for bids on this project. The final engineering design will depend on selection of a vendor and the size and fuel requirements of their boiler. We will advise your office of these details when known.

Sincerely,

R. W. Ladd

R. W. Ladd
Specialist
Air & Water Conservation

RWL/sjl

cc: Mr. Walter L. Kabis